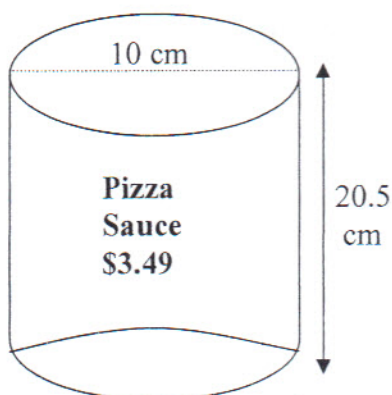


SA & VOLUME WORD PROBLEMS

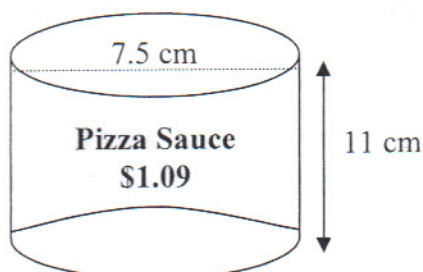
	Incomplete 0	Unacceptable 1	Poor 2	Acceptable 3	Good 4	Outstanding 5
TECHNICAL CORRECTNESS OF SOLUTIONS	All or most solutions are blank	No solutions are correct or many left blank	Few solutions are technically correct	Some solutions are technically correct	Most solutions are technically correct	All or almost all solutions are technically correct
PRESENTATION OF SOLUTIONS	All or most solutions are blank	No evidence of presentation or many solutions left blank	Solutions to few problems stand alone	Solutions to some problems can stand alone	Solutions to most problems can stand alone	Solutions to all or almost all problems can stand alone

1. If both of the pizza sauce cans shown below are cylinders, which is the better buy? Justify your answer.

[9]



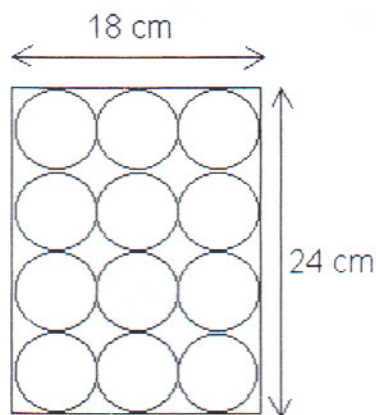
$$\begin{aligned}
 V &= \pi r^2 h \\
 &= \pi (5)^2 (20.5) \\
 &= 1609.25 \text{ cm}^3
 \end{aligned}$$



$$\begin{aligned}
 V &= \pi r^2 h \\
 &= \pi (3.75)^2 (11) \\
 &= 485.72 \text{ cm}^3
 \end{aligned}$$

2. Cans of soup are often packed in boxes as shown in the diagram below. How much area is wasted in between all the cans?

[7]



$$\begin{aligned}
 A_{\text{rect}} &= 18 \times 24 \\
 &= 432 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 A_{\text{can}} &= \pi r^2 \\
 &= \pi (3)^2 \\
 &= 28.26 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 A_{12 \text{ cans}} &= 12 \times 28.26 \\
 &= 339.12
 \end{aligned}$$

Wasted Area:

$$\begin{aligned}
 A_{\text{rect}} - A_{12 \text{ cans}} \\
 &= 432 - 339.12 \\
 &= 92.88 \text{ cm}^2
 \end{aligned}$$

3. A cubic tank with 4.6 meter edges is filled with water. How much water will be left in the cubic tank if it is used to fill a cylindrical water truck with a radius of 2.2 meters and a length of 4.6 meters?

[3]

$$V_{\text{cube}} = 4.6^3 \\ = 97.336 \text{ m}^3$$

$$V_{\text{cylinder}} = \pi r^2 h \\ = \pi (2.2)^2 (4.6) \\ = 69.91 \text{ m}^3$$

$$\text{Water left} \\ = V_{\text{cube}} - V_{\text{cylinder}} \\ = 97.336 - 69.91 \\ = 27.43 \text{ m}^3$$

4. How much cat food would fit into a can that has a height of 14.5 cm and a diameter of 9 cm. How much paper is needed to make the label?

[4]

$$V = \pi r^2 h \\ = \pi (4.5)^2 (14.5) \\ = 921.9825 \text{ cm}^3$$

921.9825 cm³ of food
fit in the can

Assuming the label does not go on top and bottom:

$$SA = 2\pi rh \\ = 2\pi (4.5)(14.5) \\ = 409.77 \text{ cm}^2$$

\therefore 409.77 cm² of paper is needed to make
the label.

5. A square based pyramid has a base area of 36 cm² and a volume of 96 cm³. What is the surface area?

[8]

6. Three identical tennis balls with an 8 cm diameter are stacked inside a cylindrical container. Calculate the Volume of this container and the Surface Area.

[5]

$$r = 8 \div 2 \\ = 4$$

$$h = 8 \times 3 \\ = 24$$

$$V = \pi r^2 h \\ = \pi (4)^2 (24) \\ = 1205.76 \text{ cm}^3$$

$$SA = 2\pi r^2 + 2\pi rh \\ = 2\pi (4)^2 + 2\pi (4)(24) \\ = 100.48 + 602.88 \\ = 703.36 \text{ cm}^2$$